

## Trig Worksheet #4 – Word Problems

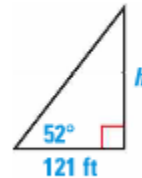
1.

**SOCCER** A soccer ball is placed 10 feet away from the goal, which is 8 feet high. You kick the ball and it hits the crossbar along the top of the goal. What is the angle of elevation of your kick?



2.

**ROLLER COASTERS** A roller coaster makes an angle of  $52^\circ$  with the ground. The horizontal distance from the crest of the hill to the bottom of the hill is about 121 feet, as shown. Find the height  $h$  of the roller coaster to the nearest foot.



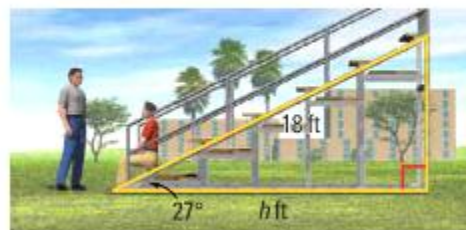
3.

**AIRPLANE RAMP** The airplane door is 19 feet off the ground and the ramp has a  $31^\circ$  angle of elevation. What is the length  $y$  of the ramp?



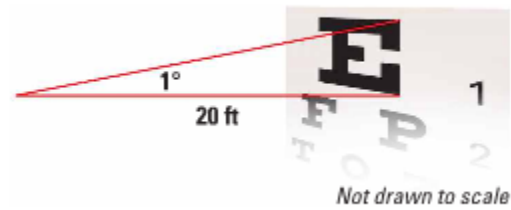
4.

**BLEACHERS** Find the horizontal distance  $h$  the bleachers cover. Round to the nearest foot.



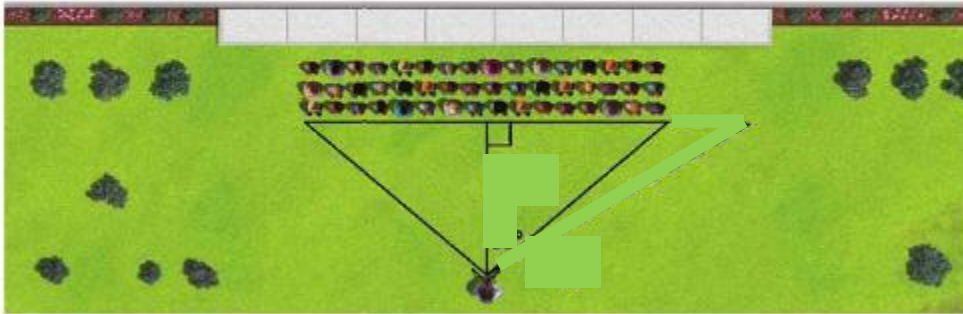
5.

**EYE CHART** You are looking at an eye chart that is 20 feet away. Your eyes are level with the bottom of the “E” on the chart. To see the top of the “E,” you look up  $1^\circ$ . How tall is the “E”?



6.

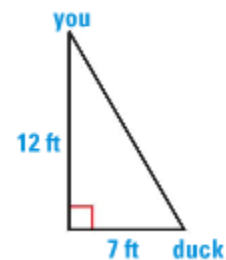
Your class is having a class picture taken on the lawn. The photographer is positioned 14 feet away from the center of the class. If she looks toward either end of the class, she turns  $50^\circ$ .



What is the distance between the ends of the class?

7.

**★ SHORT RESPONSE** You are standing on a footbridge in a city park that is 12 feet high above a pond. You look down and see a duck in the water 7 feet away from the footbridge. What is the angle of depression? *Explain* your reasoning.



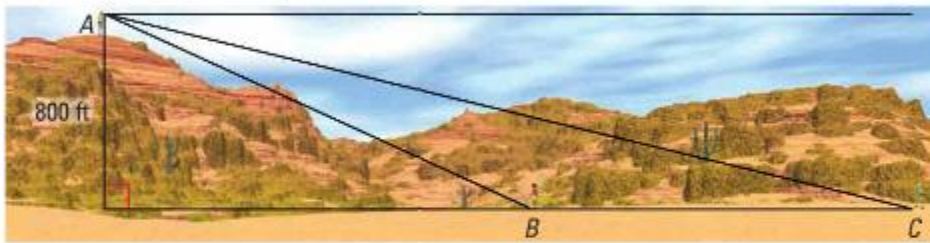
8.

**WASHINGTON MONUMENT** A surveyor is standing 118 feet from the base of the Washington Monument. The surveyor measures the angle between the ground and the top of the monument to be  $78^\circ$ . Find the height  $h$  of the Washington Monument to the nearest foot.



9.

**MULTI-STEP PROBLEM** You are standing on a plateau that is 800 feet above a basin where you can see two hikers.



- If the angle of depression from your line of sight to the hiker at  $B$  is  $25^\circ$ , how far is the hiker from the base of the plateau?
- If the angle of depression from your line of sight to the hiker at  $C$  is  $15^\circ$ , how far is the hiker from the base of the plateau?
- How far apart are the two hikers? *Explain.*

10.

**★ SHORT RESPONSE** You are flying a kite with 20 feet of string extended. The angle of elevation from the spool of string to the kite is  $41^\circ$ .

- Draw and label a diagram to represent the situation.
- How far off the ground is the kite if you hold the spool 5 feet off the ground? *Describe* how the height where you hold the spool affects the height of the kite.